


CLAIMS

What is claimed is:

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1. A method for making a heat exchanger of a furnace system comprising the steps of:
applying a layer of an oxidizable material on a first surface of said heat exchanger;
and
oxidizing said layer of oxidizable material to form a layer of dark material having a
high emissivity.
2. The method as recited in claim 1 wherein the step of applying said layer of said
oxidizable material includes applying said layer of oxidizable material
electrochemically.
3. The method as recited in claim 1 wherein step of oxidizing said layer of oxidizable
material includes utilizing an oxidizing alkaline solution to oxidize said layer of
oxidizable material.
4. The method as recited in claim 1 wherein said layer of oxidizable material is copper.
5. The method as recited in claim 4 wherein said layer of oxidizable material is oxidized
to cupric oxide.
6. The method as recited in claim 1 wherein said layer of oxidizable material is iron.
7. The method as recited in claim 6 wherein said layer of oxidizable material is oxidized
to magnetite.
8. The method as recited in claim 1 further including the step of applying said layer of
oxidizable material to a second surface of said heat exchanger component.

9. The method as recited in claim 1 wherein said first surface is an inner surface and said layer of oxidizable material applied on said first surface is copper which is oxidized to cupric oxide and said second surface is an outer surface and said layer of oxidizable material applied on said second surface is iron which is oxidized to magnetite.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100.

10. A heat exchanger of a furnace system comprising:
a first surface; and
a layer of dark material having a high emissivity applied on said first surface.
11. The heat exchanger as recited in claim 10 wherein said layer of dark material is cupric oxide.
12. The heat exchanger as recited in claim 10 wherein said layer of dark material is magnetite.
13. The heat exchanger as recited in claim 10 wherein said heat exchanger is made of a steel alloy.
14. The heat exchanger as recited in claim 10 wherein said heat exchanger is made of a metal coated steel.
15. The heat exchanger as recited in claim 10 wherein said heat exchanger is a primary heat exchanger.
16. The heat exchanger as recited in claim 10 wherein heat exchanger further includes an opposing second surface and said layer of dark material is also applied on said opposing second surface.
17. The heat exchanger as recited in claim 10 wherein said first surface of said heat exchanger is an inner surface and said layer of material applied on said first surface is cupric oxide and said second surface of said heat exchanger is an outer surface and said layer of dark material applied on said second surface is magnetite.

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